

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in this Application. It is noted that this listing of claims is in a proper format for a reissue application, according to 37 CFR 1.173. The listing of claims has been amended to reference the originally issued claims of U.S. Patent No. 5,865,846, of which the present application is a reissue.

Listing of Claims:

1-3 (Cancelled)

4. (Currently Amended) A method of surgery comprising: [the steps of removing a vertebral disc from a patient's spine, forming holes at precisely predetermined locations in bone structure adjacent the location of the removed disc, tapping the holes to form a female thread in each hole, and threadably implanting an anchor into each tapped hole, thereby creating reference points located precisely with respect to the patient's spine,]

(a) forming concave surfaces in the endplates of confronting vertebral bodies[in adjacent spinal bone], and

(b) inserting between the formed [bone] concave surfaces [a vertebral] an intervertebral disc endoprosthesis, [including] comprising:

(1) confronting concaval-convex supports, each support having an exterior convex surface adapted to mate with [the adjacent] one of the formed concave [spinal bone surface] surfaces, [, the endoprosthesis further including] and

(2) a resilient body element interposed between the concaval-convex supports[, and thereafter affixing the concaval-convex supports to the adjacent bone].

5-8 (Cancelled).

9. (Currently amended) A method of endoprosthetic discectomy surgery comprising: [the steps of]

receiving information about the size, shape and nature of a patient's involved [and proximate normal] natural spinal vertebral bodies and natural spinal vertebral discs from [known] imaging devices, [thereafter constructing at least one vertebral disc endoprosthesis comprising a resilient disc body and concaval-convex elements at least partly surrounding the resilient disc body],

removing at least the involved, damaged natural spinal [discs] disc material from the patient's spine,

forming concave surfaces in adjacent spinal [bone] vertebral bodies, the concave surfaces being concave about multiple planes, and [thereafter]

implanting [the vertebral] an intervertebral disc endoprosthesis comprising a resilient disc body and concaval-convex elements at least partly surrounding the resilient disc body in the patient's spine.

10-20 (Cancelled)

21. (New) A method of surgery comprising:
forming partially hemispherical surfaces in endplates of confronting vertebral bodies; and

inserting between the formed partially hemispherical surfaces an intervertebral disc prosthesis comprising confronting supports, each support having a partially hemispherical exterior surface adapted to mate with one of the formed partially hemispherical surfaces, wherein the supports are capable of movement relative to each other after the prosthesis has been inserted between the formed partially hemispherical surfaces.

22. (New) The method of surgery according to claim 21, wherein the partially hemispherical surfaces are formed using a milling jig.

23. (New) The method of surgery according to claim 21, further comprising: prior to forming the partially hemispherical surfaces in the vertebral body endplates, implanting at least one anchor into a hole having a predetermined position in an anterior surface of at least one of the confronting vertebral bodies; and affixing a bone surface milling mechanism to the at least one anchor.

24. (New) A method for inserting an intervertebral disc prosthesis having a first and second surface, the method comprising:
forming a first indentation in a first endplate of a first vertebral body, the first indentation having a middle portion and a circumferential rim such that the middle portion is deeper into the first vertebral body than any part of the circumferential rim;
fixedly mating the first surface to the first indentation of the first endplate of the first vertebral body, the first surface having a shape that conforms to the first indentation;
and
fixedly mating the second surface to a second vertebral body.

25. (New) The method of claim 24 wherein the first indentation is formed by attaching a milling jig to either the first or second vertebral body and milling the first indentation.

26. (New) The method of claim 24 wherein the first indentation is concave about multiple planes and the first surface of the intervertebral disc prosthesis has a convex shape.

27. (New) The method of claim 24 wherein the first and second surface are capable of relative movement after being mated to the first and second vertebral bodies, respectively.

28. (New) The method of claim 24 further comprising:
forming a second indentation in a second endplate of the second vertebral body, the second indentation having a middle portion and a circumferential rim such that the middle portion is deeper into the second vertebral body than any part of the circumferential rim.

29. (New) A method of surgery comprising:
forming a first surface in an endplate of a first vertebral body, the first surface being arcuate in multiple planes;
inserting a motion-preserving disc prosthesis into an intervertebral space adjacent to the formed first arcuate surface; and
positioning a first portion of the inserted prosthesis against the formed first surface of the first vertebral body, wherein the first portion has an exterior configuration adapted to mate with the formed first surface.

30. (New) The method of surgery of claim 29 further comprising:
forming a second arcuate surface in an endplate of a second vertebral body opposing the first vertebral body; and
positioning a second portion of the inserted prosthesis against the formed second arcuate surface of the second vertebral body, wherein the second portion has an exterior configuration adapted to mate with the formed second arcuate surface.

31. (New) The method of surgery of claim 30 further comprising:
attaching a milling jig to at least one of the first and second vertebral bodies for
milling the arcuate surfaces in the endplates of the first and second vertebral bodies.

32. (New) A method of surgery comprising:
attaching a milling jig to a vertebral body;
milling an endplate of the vertebral body to a relatively shallow thickness as
compared to an overall thickness of the vertebral body; and
positioning a motion-preserving implant into a disc space adjacent the milled
endplate, the implant have a surface that conforms to the milled endplate.

33. (New) The method of claim 32, wherein the endplate is milled to form a
shape having a depth less than its width.

34. (New) The method of claim 33 wherein the shape is convex about
multiple planes.